

What is claimed is:

1. An apparatus for transferring and tilting a work piece, said apparatus comprising:
 - a transport carriage assembly for motion along a guide track having a limit position; the transport carriage assembly further comprising:
 - a first carriage member, said first carriage member being pivotally connected to a first linkage arm at a first pivot point, and
 - a second carriage member pivotally connected to a second linkage arm at a second pivot point, said first and second linkage arms being pivotally connected to one another at a third pivot point; and,
 - a work piece support coupled with the second carriage member wherein, under a drive force, the transport carriage assembly travels along the guide track, until the second carriage member reaches the limit position, whereupon the first carriage member continues to move, decreasing its relative distance from the second carriage member and simultaneously causing the first linkage arm and the second linkage arm to pivot about the third pivot point, thereby causing the work piece support to tilt.
2. The apparatus of claim 1 wherein the work piece support includes a load bearing member which is fixed to the second linkage arm.
3. The apparatus of claim 2 wherein the third pivot point is located beneath the load bearing member.
4. The apparatus of claim 3 wherein the first carriage member includes a support extension to support the load bearing member in a transfer position.

5. The apparatus of claim 4 wherein the first and second linkage arms are sloped.
6. The apparatus of claim 1 further comprising a drive unit for driving the carriage assembly along the guide track.
7. The apparatus of claim 6 wherein the drive unit includes a drive motor and a transmission portion arranged to displace the carriage members relative to the guide track.
8. The apparatus of claim 7 wherein the transmission drives the first carriage member.
9. The apparatus of claim 8 wherein the drive motor is a servo motor.
10. The apparatus of claim 8 wherein the drive motor is configured to decelerate toward the limit position.
11. The apparatus of claim 5 wherein, the first end of the load bearing member is rigidly attached to the second linkage arm at a selected angle thereto.
12. A transfer device comprising an undercarriage with two or more carriage portions which are movable along a travel path between a first location and a second location, the carriage portions carrying at least one work piece support, a linkage extending between the carriage portions, where the linkage is operable to change the position of the work piece support when one carriage portion moves relative to another along the travel path.

13. A device as defined in claim 12 wherein, during the relative movement, one of said carriage portions is stationary.
14. A device as defined in claim 13 wherein the work piece support is movable between a work piece transfer position and a work piece loading position.
15. A device as defined in claim 12 wherein the carriage portions are confined to travel along said travel path.
16. A device as defined in claim 15 wherein the travel path is linear.
17. A device as defined in claim 12 wherein the linkage includes two pairs of arms, each one being pivotally connected to a corresponding carriage portion.
18. A device as defined in claim 17, further comprising a rotational drive unit for rotating at least one of said pairs of arms.
19. A device as defined in claim 17 wherein said pairs of arms are pivotally connected together at a common pivot location.
20. A device as defined in claim 19 wherein the work piece support is fixedly attached to one of said pair of arms near said common pivot location.
21. A device as defined in claim 12 wherein the work piece support is generally horizontal at one of said locations and is inclined at the other of said locations.
22. A device as defined in claim 12 further comprising a limit station to limit movement of one of said carriage portions along said travel path.

23. A device as defined in claim 12 further comprising a releasable anchor portion for removably anchoring one of said carriages as the other carriage portion travels along said travel path.
24. A transfer device for transferring a work piece from a loading station to a welding station, the transfer device comprising an undercarriage having at least two carriage portions which are movable along a travel path between the loading station and the welding station, the carriage portions carrying at least one work piece support, a drive unit for driving the carriage portions along the travel path and a linkage joining the carriage portions, the linkage being operable to change the orientation of the work piece when one carriage portion moves relative to the other carriage portion along the travel path.
25. A welding installation comprising a welding station, a loading station and a transfer device for transferring a work piece between the stations, the transfer device having a work piece support and an undercarriage with two or more carriage portions, the carriage portions being movable by a drive unit along a travel path between the loading station and the welding station, the carriage portions being interconnected by a linkage which is operable to change the orientation of the work piece support together with a corresponding change in the position of one carriage portion relative to the other along the travel path.
26. A method of transferring work pieces between a loading station and a welding station, comprising:
 - a. providing a work piece support;

- b. supporting the work piece support on a carriage; equipping the carriage with a pair of carriage portions which are movable along a travel path; and
 - c. providing a linkage between the work piece support and the carriage portions, which linkage is capable of changing the orientation of the work piece support when one carriage portion travels relative to the other carriage portion along the travel path.
- 27. A transfer device for transferring a work piece between a loading station and a welding station, comprising:
 - a. undercarriage means having at least two carriage means, the carriage means movable independently of one another along a travel path between the loading station and the welding station;
 - b. work piece support means supported by the undercarriage means;
 - c. drive means to transfer at least one of said carriage means between the loading and welding stations; and
 - d. linkage means joining each of the carriage means for orienting the work piece support means between a transfer portion and a loading position; wherein the linkage is actuated when one carriage means moves relative to the other carriage means along the travel path.
- 28. A method of transferring work pieces between a loading station and a work piece processing station, comprising:
 - a. a step for providing a work piece support;
 - b. a step for supporting the work piece support on a carriage;
 - c. a step for equipping the carriage with two or more carriage portions which are movable along a travel path; and

- d. a step for providing a linkage between the work piece support and the carriage portions which is capable of changing the orientation of the work piece support when one carriage portion travels relative to the other carriage portion along the travel path.